

## WHAT IS CLAIMED

- 1) A toolhead for multi-axis machine tools, comprising:
  - a tool-holder rotatable about a respective machining axis, equipped with a collet in which to hold a tool, and attachable to the spindle of a spindlehead in a multi-axis machine tool;
  - a stop cage element slidable axially relative to the tool-holder, affording an active surface set transverse to the machining axis and positionable against the surface of a workpiece, capable of movement between a first operating position in which the active surface is located forward of a cutting portion presented by the tool, relative to a feed direction along which the spindlehead approaches the surface of the work, and a second operating position in which the cutting portion of the tool is located forward of the active surface, at least in part,
  - sensing means by which the axial position of the stop cage element relative to the tool-holder is monitored continuously.
- 2) A toolhead as in claim 1, wherein sensing means comprise at least one displacement sensor connected to a processing unit.

- 3) A toolhead as in claim 1, wherein the displacement sensor is an LVDT transducer.
- 4) A toolhead as in claim 3, wherein the LVDT transducer is mounted between the spindlehead and the stop cage element.
- 5) A toolhead as in claim 1, wherein the displacement sensor is a measuring probe.
- 6) A toolhead as in claim 5, wherein the measuring probe is mounted between the spindlehead and the stop cage element.
- 7) A toolhead as in claim 1, wherein the displacement sensor is an inductive transducer.
- 8) A toolhead as in claim 7, wherein the inductive transducer is mounted between the spindlehead and the stop cage element.
- 9) A toolhead as in claim 1, wherein the displacement sensor is a laser displacement sensor.
- 10) A toolhead as in claim 9, wherein the laser displacement sensor is mounted between the spindlehead and the stop cage element.

- 11) A toolhead as in claim 1, further comprising an auxiliary housing mounted rotatably to the tool-holder and associated rigidly with the selfsame tool-holder in the axial direction, wherein the stop cage element is mounted slidably to the auxiliary housing.
- 12) A toolhead as in claim 11, wherein the stop cage element is mounted to the auxiliary housing by way of a pair of rods accommodated slidably within the selfsame housing.
- 13) A toolhead as in claim 11, further comprising spring means operating between the stop cage element and the auxiliary housing, by means of which the stop cage element is biased toward the first operating position.
- 14) A multi-axis machine tool, comprising:
- a bed;
  - a spindlehead mounted to the bed and capable of movement relative to the bed on a plurality of positioning axes;
  - drive means by which the spindlehead is positioned on the various axes;
  - a toolhead comprising a tool-holder rotatable

about a respective machining axis, equipped with a collet in which to hold a tool, and attachable to the spindle of a spindlehead in a multi-axis machine tool, also a stop cage element slidable axially relative to the tool-holder, affording an active surface set transverse to the machining axis and positionable against the surface of a workpiece, capable of movement between a first operating position in which the active surface is located forward of a cutting portion presented by the tool, relative to a feed direction along which the spindlehead approaches the surface of the work, and a second operating position in which the cutting portion of the tool is located forward of the active surface, at least in part, and sensing means by which the axial position of the stop cage element relative to the tool-holder is monitored continuously, wherein the sensing means of the toolhead are connected to a processing and control unit in such a way that the axial movement of the spindlehead can be controlled according to a selected machining depth programmed into the selfsame processing and control unit.